

REMARKS

The objection to Fig. 4 has been addressed.

The indication of the allowability of Claims 4-6, 12-14 and 17-19 is noted with appreciation.

The rejection of Claims 1-3, 7-11, 15, 16 and 20 as being anticipated by Yasui et al. under 35 USC § 102(e) is traversed. Reconsideration of the rejection is requested on the following grounds with particular attention to the rejected independent claims.

Independent Claim 1 specifies that "degradation of said HC adsorption catalyst is diagnosed based on temperature of said HC adsorption catalyst while HC is being desorbed from said HC adsorption catalyst (during HC desorbing period)" as best understood by reference to Figs. 4 and 6 and the corresponding description. That is, Claim 1 defines the use of the catalyst temperature for detecting degradation of the catalyst and requires that the diagnosis of catalyst degradation is performed during a period where the catalyst is in a desorbing mode.

The Yasui et al. system detects degradation of the HC absorbing catalyst with an HC sensor. The catalyst temperature serves only for an auxiliary effect, e.g., adjustment of timing of detection of degradation by the HC sensor, adjustment of the threshold value in detection of degradation by the HC sensor, etc. This is distinct from an apparatus in which a diagnosis for detecting degradation of the HC absorbing catalyst is performed using only the temperature sensor without use of the HC sensor.

Similarly with regard to independent Claims 2 and 7, the temperatures set forth in the Yasui et al. system is the temperature at which the HC is desorbed and is used for adjustment of timing of detection of degradation by the HC sensor and adjustment of the threshold value in detection of degradation by the HC sensor. In the claimed invention, however, a temperature range of between 50°C and 250°C is set not only as the temperature at which HC desorbing is caused, but also as the temperature for burning the HC. The present invention determines degradation of catalyst by detecting a reaction heat, a feature which is shown in Figs. 1 to 3 and the corresponding description. The claimed invention requires diagnosis of degradation of the HC absorbing catalyst based on only information of the temperature sensor unlike the Yasui et al. system.

Claim 2 further requires the foregoing temperature range, i.e., 50°C to 250°C, at which HC is desorbed and burned (purified) for performing diagnosis. Claim 7 requires that "a time period that HC is being desorbed from said HC adsorption catalyst (HC desorbing time period) is measured, and if said HC desorbing time period is larger than a preset diagnosis threshold, it is judged that said HC adsorption catalyst is degraded." That is, degradation of the HC absorbing catalyst is based only on the catalyst temperature in the foregoing temperature range for desorbing HC.

Claim 3 requires a catalyst temperature sensor for providing information of the temperature of the HC absorbing catalyst. Because the Yasui et al. system requires the HC sensor as an essential element in the detection of degradation of the HC absorbing catalyst, it would not have employed the claimed detector.

Claim 10 specifies that "if said desorbing time period exceeds a preset time, judgment of degradation of said HC adsorption catalyst is prohibited." This feature prevents an erroneous diagnosis due to fluctuation caused by a moisture amount absorbed in the HC absorbing catalyst and/or engine driving condition. No such teaching is found in Yasui et al.

Claims 11, 15 and 20 require, respectively, that if a cumulative value or a maximum value of a flow rate of air flowing into said internal combustion engine during said HC desorbing time period exceeds a preset value, judgment of degradation of said HC adsorption catalyst is prohibited, said internal combustion engine comprises an air flow rate measurement instrument for measuring or estimating a flow rate of air flowing into said internal combustion engine and said diagnosis threshold is corrected based on a flow rate of air flowing into said internal combustion engine during said HC desorbing time period. These elements prohibit diagnosis of degradation of HC absorbing catalyst or correct the threshold value on the basis of the catalyst temperature depending upon intake air flow rate. Yasui et al. merely teaches prohibiting diagnosis depending upon intake air flow rate, but requires the HC sensor to do so.

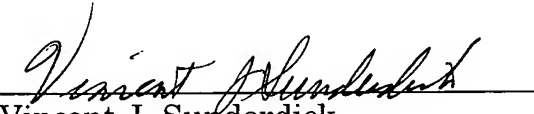
Accordingly, early and favorable action on all the claims is earnestly solicited.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #381NP/50962).

Respectfully submitted,

July 28, 2003


Vincent J. Sunderdick
Registration No. 29,004
for James F. McKeown
Registration No. 25,406

CROWELL & MORING, LLP
P.O. Box 14300
Washington, DC 20044-4300
Telephone No.: (202) 624-2500
Facsimile No.: (202) 628-8844

JFM/acd
056207.50962US